

Obesity in Horses is on the Rise

Virginia-Maryland Regional College of Veterinary Medicine researchers study equine obesity.

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America's growing obesity problem has alarmed physicians and public health officials, and veterinarians have recently focused attention on fat dogs and cats. Now, a team of researchers in the Virginia-Maryland Regional College of Veterinary Medicine and the College of Agriculture and Life Sciences at Virginia Tech has determined that horses are also facing serious health risks because of obesity.

Fifty-one percent of the horses evaluated during the pioneering study were determined to be overweight or obese--and may be subject to serious health problems like laminitis and hyperinsulinemia (insulin resistance). And just like people, it appears as though the culprits are overeating and lack of exercise.

"This study documented that this is an extremely important problem in horses that has been under-reported," says Dr. Craig Thatcher, a professor in the veterinary college's Department of Large Animal Clinical Sciences and Diplomate in the American College of Veterinary Nutrition.

Thatcher and his colleagues believe the study results suggest that horse owners should change some of the ways in which they care for their horses--and hinted that horses could emerge as an important model for studying the health implications of human obesity.

"Obesity, over the past decade, has become a major health concern in horses," says Dr. Scott Pleasant, an associate professor in Department of Large Animal Clinical Sciences and Diplomate in the American College of Veterinary Surgeons. "This is primarily because of its association with problems such as insulin resistance and laminitis."

In fact, it was a spike in pasture-associated laminitis cases that led Pleasant to grow curious and seek the collaboration of Thatcher on the innovative research project. Dr. Ray Geor, the Paul Mellon Distinguished Professor of Agriculture in the College of Agriculture and Life Sciences and director of the Middleburg Agricultural research and Extension Center in Middleburg, Va., and Dr. Francois Elvinger, an epidemiologist and associate professor in the Department of Large Animal Clinical Sciences, also worked on the study.

Funded in part by the Virginia Horse Industry Board, the study hypothesized that overweight horses may suffer from laminitis, insulin and sugar imbalances, chronic inflammation, and oxidative stress, a malady that occurs as a result of changes to metabolic processes that alter the delicate balances between the destruction and creation of new cells in the body.

Other problems caused by equine obesity are heat stress, increased bone, tendon and joint injuries, and reduced performance levels.

Until now, only one other study had looked at obesity in horses. A 1998 owner-reported survey of horse-owners conducted by the USDA's National Animal Health Monitoring System (NAHMS) suggested about 5 percent of horses were overweight.

Based upon the horses routinely seen through clinical practice in the Veterinary Teaching Hospital, however, the researchers suspected the incidence might be higher. "We thought it was at a level of at least 15 percent," Thatcher says.

The research team designed a prospective study and examined 300 horses from 114 different farms chosen randomly from about 1,000 horses that have been treated through the college's Equine Field Service program.

Two independent body-conditioning scores (BCS), which assess the amount of fat cover on the horses, were assigned to each animal. Each horse was checked for signs of laminitis and blood was drawn to assess glucose and insulin levels, as well as other hormones, cytokines, and oxidative biomarkers.

While laboratory testing and data analysis are still underway, the research team has already made some alarming discoveries.

Fifty-one percent of the horses in the study were found to be overweight and 19 percent were found to be obese. Eighteen percent of the overweight horses and 32 percent of the obese horses were hyperinsulemic (insulin resistant).

The study also suggests that equine obesity may result from natural grazing behavior instead of the overfeeding of grains and other feed supplements, which defies conventional thinking on equine weight matters. The majority of horses examined in the study were fed primarily pasture and hay with very little grain and concentrate.

Instead of overfeeding of grain and concentrates, the evidence indicates that improved forage and lack of exercise are the two most common contributing factors in equine obesity.

Horses today are managed much differently from their evolutionary roots, Pleasant explained. "The horse evolved as a free-roaming grazer on sparse pasture types," he says. Later the horse served primarily as a work animal, serving as a source of transportation and draft power. Today, most horses serve as companions and light performance animals, Pleasant continued.

This research project remains underway, and has laid the groundwork for a series of provocative new studies.

"Other studies by our group have clearly shown that obesity and insulin resistance are important risk factors for pasture-associated laminitis," Geor says. "This study underscores the importance of obesity to equine health," Geor says, noting that current studies are further exploring how obesity, diet and exercise management alter insulin resistance and therefore the susceptibility of horses and ponies to laminitis. The goal is development of management strategies that assist in the avoidance of this devastating disease.

The researchers are now focusing more specifically on the role of hormone levels, oxidative stress, inflammatory biomarkers and antioxidant mechanisms. However, the preliminary data clearly demonstrates that this research has important implications for both equine and human health.

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